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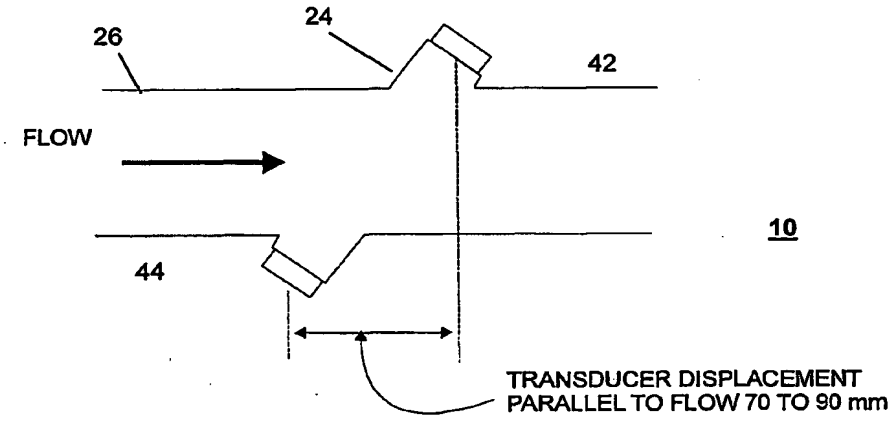
(54) Title: IMPROVED SENSING APPARATUS AND METHOD



(57) Abstract: The present invention relates to the field of sensing apparatus (10) in detecting particles in air sampled from a number of locations. In one aspect the present invention provides for the determination of the time of flight of a signal transmitted between a transmitter (42, 44) and a receiver (44, 42), comprising: transmitting a first signal comprising at least one characteristic waveform feature; transmitting a second signal comprising at least one characteristic waveform feature and a waveform modification introduced at a predetermined point in time of the duration of the second signal; receiving said first and second transmitted signals; determining a point of diversion between corresponding characteristic waveform features of the first and second received signals comprising super positioning said first and second received signals such that said point of diversion corresponds to an arrival time of the introduced waveform feature modification at the receiver. In a preferred embodiment, the invention provides an accurate time of flight determination of ultrasonic signals in a flow sensor (24) adapted for a smoke detector system (10).

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